

LISTING OF THE CLAIMS

► The following listing of claims replaces all prior listing of claims in the application:

Claim 1 (original): An apparatus for sensing an occupant in a vehicle, said apparatus comprising:

- a seat defining a first zone;

- a first sensor, said first sensor including:

 - a first member;

 - a connecting member attached to said first member;

 - a potentiometer including:

 - a shuttle attached to said connecting member,

 - a wiper attached to said shuttle,

 - a resistive member in electrical contact with said wiper, said shuttle moving relative to said resistive member in response to a deflection of said seat in said first zone,

 - a first electrical connection to said wiper, and

 - at least one second electrical connection to said resistive member, a resistance between said first electrical connection and said at least one second electrical connection varying with said deflection;

a processor in electrical communication with said first sensor, said processor programmed to execute a process for determining at least one of a weight and a presence of the occupant; and

a vehicle occupant restraint system in communication with said processor, said vehicle occupant restraint system controlled by said processor.

Claim 2 (original): The apparatus of Claim 1 wherein said potentiometer further includes a spring forcing said shuttle to a neutral position.

Claim 3 (original): The apparatus of Claim 1 wherein one of said first member and a potentiometer body is attached to said seat.

Claim 4 (original): The apparatus of Claim 1 wherein one of said first member and a potentiometer body is in contact with a surface selected from the group consisting of a sitting portion of said seat, a back support of said seat, and a headrest of said seat.

Claim 5 (original): The apparatus of Claim 1 wherein a linear movement of said first member is transferred to a linear movement of said shuttle.

Claim 6 (original): The apparatus of Claim 1 wherein said connecting member is a flexible shaft housed in a sheath whereby a linear movement of said first member is transferred to a linear movement of said shuttle.

Claim 7 (withdrawn): The apparatus of Claim 1 wherein a linear movement of said first member is transferred to a rotary movement of said shuttle.

Claim 8 (original): The apparatus of Claim 1 wherein said vehicle occupant restraint system includes an air bag system.

Claim 9 (original): The apparatus of Claim 1 further including a second sensor associated with a second zone defined on said seat.

Claim 10 (original): The apparatus of Claim 1 further including a second sensor associated with a second zone defined on said seat, said processor programmed to execute a process for determining a seated location of the occupant.

Claim 11 (original): An apparatus for sensing an occupant in a vehicle, said apparatus comprising:

- a seat defining a plurality of zones;

- a plurality of first sensors, each said first sensor including:

 - a first member;

 - a connecting member attached to said first member;

 - a potentiometer including:

 - a shuttle attached to said connecting member;

 - a wiper attached to said shuttle;

 - a resistive member in electrical contact with said wiper, said shuttle moving relative to said resistive member in response to a deflection of said seat in a corresponding one of said plurality of zones;

 - a first electrical connection from said wiper; and

at least one second electrical connection from said resistive member, a resistance between said first electrical connection and said at least one second electrical connection varying with said deflection;

a processor in electrical communication with said plurality of first sensors, said processor programmed to execute a process for determining at least one of a weight, presence, and a seated location of the occupant; and

a vehicle occupant restraint system in communication with said processor, said vehicle occupant restraint system controlled by said processor.

Claim 12 (original): The apparatus of Claim 11 wherein said potentiometer further includes a spring forcing said shuttle to a neutral position.

Claim 13 (original): The apparatus of Claim 11 wherein one of said first member and a potentiometer body is attached to said seat.

Claim 14 (original): The apparatus of Claim 11 wherein one of said first member and a potentiometer body is in contact with a surface selected from the group consisting of a sitting portion of said seat, a back support of said seat, and a headrest of said seat.

Claim 15 (original): The apparatus of Claim 11 wherein a linear movement of said first member is transferred to a linear movement of said shuttle.

Claim 16 (original): The apparatus of Claim 11 wherein said connecting member is a flexible shaft housed in a sheath whereby a linear movement of said first member is transferred to a linear movement of said shuttle.

Claim 17 (withdrawn): The apparatus of Claim 11 wherein a linear movement of said first member is transferred to a rotary movement of said shuttle.

Claim 18 (original): The apparatus of Claim 11 wherein said vehicle occupant restraint system includes an air bag system.

Claim 19 (withdrawn): An apparatus for sensing an occupant in a vehicle, said apparatus comprising:

- a seat having a plurality of first zones defined on a sitting portion;

- a plurality of first sensors, each said first sensor including:

 - a first member;

 - a first connecting member attached to said first member;

 - a second connecting member engaging said first member;

- a potentiometer attached to said second connecting member, said potentiometer being a rotary potentiometer and including:

 - a wiper attached to said second connecting member;

 - a resistive member in electrical contact with said wiper, said second connecting member rotating in response to a deflection of said seat;

 - a first electrical connection from said wiper; and

 - at least one second electrical connection from said resistive strip, said resistance between said first electrical connection and said at least one second electrical connection varies with said deflection;

a processor in electrical communication with said plurality of first sensors, said processor programmed to execute a process for determining at least one of a weight, presence, and a seated location of the occupant; and

a vehicle occupant restraint system in communication with said processor, said vehicle occupant restraint system controlled by said processor.

Claim 20 (withdrawn): The apparatus of Claim 19 wherein said seat has a surface that deflects in response to a weight of said occupant.

Claim 21 (withdrawn): The apparatus of Claim 19 wherein said seat has a plurality of second zones defined on a back support of said seat, said plurality of second zones having a plurality of second sensors attached to a seat back frame behind said back support; and wherein at least one of said plurality of second sensors has said first member in a corresponding one of said plurality of second zones.

Claim 22 (withdrawn): The apparatus of Claim 19 wherein said seat has a plurality of second zones defined on a headrest of said seat, said plurality of second zones having a plurality of second sensors attached to a seat headrest frame behind said headrest; and wherein at least one of said plurality of second sensors has said first member in a corresponding one of said plurality of second zones.

Claim 23 (withdrawn): The apparatus of Claim 19 wherein said member has a flat surface normal to said first connecting member's direction of movement, said flat surface in contact with said sitting portion of said seat when said seat deflects.

Claim 24 (original): An apparatus for sensing an occupant in a vehicle, said apparatus comprising:

a seat having a plurality of zones defined on a sitting portion;

a plurality of sensors, each of said plurality of sensors actuated by a corresponding one of a plurality of first members, said plurality of first members responsive to a deflection of said sitting portion in a corresponding one of said plurality of zones, each of said plurality of sensors including a corresponding one of a plurality of potentiometers, a deflection of each one of said plurality of first members causes a corresponding one of said plurality of potentiometers to have a resistance value;

a processor in electrical communication with said plurality of sensors, said processor programmed to execute a process for determining the presence of the occupant in said seat; and

an occupant restraint system in communication with said processor, said occupant restraint system controlled by said processor.

Claim 25 (original): The apparatus of Claim 24 further including a plurality of connecting members, each connecting member attached to said first member and operating a shuttle in said potentiometer, said shuttle moving a wiper along a resistive member, said wiper having an electrical connection in communication with said processor.

Claim 26 (withdrawn): The apparatus of Claim 24 wherein each of said plurality of first members is attached to a shaft of a corresponding one of said plurality of potentiometers, each of said plurality of potentiometers having a resistance that varies with rotary movement of said shaft.

Claim 27 (original): The apparatus of Claim 24 wherein said processor is programmed to execute a process for determining at least one of a weight and a seated location of the occupant in said seat.

Claim 28 (original): The apparatus of Claim 24 wherein said processor is programmed to execute a process for determining a weight whereby said process includes at least one of using a lookup table and calculating said weight from said plurality of sensors,

Claim 29 (original): The apparatus of Claim 24 wherein said plurality of zones includes at least two zones providing front to back sitting location of the occupant on said seat.

Claim 30 (original): The apparatus of Claim 24 wherein said plurality of zones includes at least two zones providing left to right sitting location of the occupant on said seat.

Claim 31 (original): An apparatus for sensing an occupant in a vehicle, said apparatus comprising:

- a seat having a sitting portion;

- a plurality of sensors, each one of said plurality of sensors including:

 - a first member responsive to a deflection of said sitting portion,

 - a first connecting member attached to said first member,

 - a potentiometer actuated by said first connecting member;

a processor in electrical communication with said plurality of sensors, said processor programmed to execute a process for determining the presence of the occupant in said seat; and

an occupant restraint system in communication with said processor, said occupant restraint system controlled by said processor.

Claim 32 (original): The apparatus of Claim 31 wherein said first connecting member operates a shuttle in said potentiometer, said shuttle moving a wiper along a resistive member, said wiper having an electrical connection in communication with said processor.

Claim 33 (withdrawn): The apparatus of Claim 31 whereby said first connecting member engages a second connecting member attached to said potentiometer, said second connecting member rotating in response to said first connecting member moving linearly.

Claim 34 (original): The apparatus of Claim 31 wherein said processor is programmed to execute a process for determining at least one of a weight and a seated location of the occupant in said seat.

Claim 35 (original): A sensor for detecting an occupant seated in a vehicle, said sensor comprising:

a first member;

a connecting member engaging said first member;

a potentiometer including:

a body, said first member moving linearly in relation to said body;

a shuttle attached to said connecting member;

a wiper attached to said shuttle;

a resistive member in electrical contact with said wiper, said shuttle moving relative to said resistive member in response to a deflection of said seat;

a first electrical connection from said wiper; and

at least one second electrical connection from said resistive member, a resistance between said first electrical connection and said at least one second electrical connection varying with said deflection.

Claim 36 (original): The sensor of Claim 35 wherein said first member is in contact with a surface selected from the group consisting of a sitting portion of said seat, a back support of said seat, and a headrest of said seat.

Claim 37 (original): The sensor of Claim 35 wherein said potentiometer body is attached to a surface selected from the group consisting of a sitting portion of said seat, a back support of said seat, and a headrest of said seat.

Claim 38 (original): The sensor of Claim 35 wherein a linear movement of said first member is transferred to a linear movement of said shuttle.

Claim 39 (original): The sensor of Claim 35 wherein said connecting member is a flexible shaft housed in a sheath whereby a linear movement of said first member is transferred to a linear movement of said shuttle.

Claim 40 (withdrawn): The sensor of Claim 35 wherein a linear movement of said first member is transferred to a rotary movement of said connecting member and said shuttle.

Claim 41 (original): An apparatus for sensing an occupant in a vehicle, said apparatus comprising:

a means for sensing a deflection of a seat surface;

a means for varying a resistance based on said deflection; and

a means for controlling an air bag system based on said resistance.